WHAT IS CLAIMED IS:

1. A cleaning system adapted for cleaning semiconductor processing equipment, said cleaning system comprising:

a remote dissociator coupled to said equipment by a transport mechanism;

a local dissociator integrally related to said equipment; and

a precursor disposed in said remote dissociator;

wherein said remote dissociator is operable to dissociate said precursor to create a first plurality of cleaning radicals, said cleaning radicals entering said transport mechanism, a first portion of said cleaning radicals entering said equipment and a second portion of said cleaning radicals recombining to create a plurality of less reactive elements in said transport mechanism, said less reactive elements entering said equipment, and said local dissociator operable to dissociate a portion of said less reactive elements to create a second plurality of cleaning radicals.

2. The cleaning system of claim 1 further comprising an optical endpoint detector, wherein said detector indicates completion of a cleaning of said equipment.

3. The cleaning system of claim 1, wherein said remote dissociator provides a greater than 75% dissociation efficiency, whereby PFCs in an exhaust from said cleaning system are reduced.

4. The cleaning system of claim 1, wherein said first portion of said cleaning radicals is less than said second portion of said cleaning radicals.

5. The cleaning system of claim 1, wherein said second plurality of cleaning radicals includes ions.

6. The cleaning system of claim 5, wherein said cleaning radicals include at least one of: Cl, F, Cl ions, or F ions.

7. A method of cleaning a semiconductor processing equipment, said method comprising:

introducing a precursor to a dissociator;

dissociating said precursor to create a first plurality of radicals;

introducing a first portion of said first plurality of radicals to said equipment, a second portion of said first plurality of radicals re-associating to create less reactive elements;

introducing said less reactive elements to said equipment; and

dissociating said less reactive elements to form a second plurality of radicals in said equipment.

8. The method of claim 7, wherein said dissociating said precursor provides at least 75% dissociation efficiency, whereby PFCs in an exhaust from said system equipment are reduced.

9. The method of claim 7, wherein said second portion of said first plurality of radicals is greater than said first portion of said first plurality of radicals.

10. The method of claim 9, wherein said precursor comprises a flourinated species capable of supplying atomic flourine.

11. The method of claim 7, wherein said second plurality of radicals includes cleaning ions.

12. The method of claim 11, wherein said cleaning ions include at least one of F ions or Cl ions.

13. The method of claim 7, wherein said dissociating said less reactive elements creates physical sputtering.

14. The method of claim 7, wherein said less reactive elements include at least one of F_2 or Cl_2.

15. The method of claim 7, further comprising: introducing a second precursor to said equipment.

16. The method of claim 15, wherein said second precursor comprises oxygen.

17. The method of claim 16, wherein said oxygen combines with carbon on said equipment to form CO_y.

18. A method of cleaning a semiconductor processing equipment, said method comprising:

introducing a first precursor to a remote dissociator;

dissociating said first precursor to create a first plurality of radicals;

introducing said first plurality of radicals to said equipment;

introducing a second precursor to said remote dissociator;

dissociating said second precursor to create a second plurality of radicals;

introducing a first portion of said second plurality of radicals to said equipment, a second portion of said second plurality of radicals re-associating to create less reactive elements;

introducing said less reactive elements to said equipment; and

dissociating said less reactive elements to form a third plurality of radicals in said equipment.

19. The method of claim 18, wherein said third plurality of radicals comprise Cl and said first plurality of radicals comprise F.

20. The method of claim 18, wherein said dissociating said first precursor includes forming a first plasma and said dissociating said less reactive elements includes forming a second plasma.

21. A semiconductor equipment cleaning system comprising:

a housing;

a remote dissociator configured to dissociate a first gas remote from said housing, said dissociation forming a second gas;

a gas delivery system to introduce a portion of said first gas, a portion of said second gas, and a re-associated portion of said second gas into said housing.

a local dissociator configured to dissociate said re-associated portion of said second gas;

a controller for controlling said remote dissociator, said gas delivery system, and said local dissociator; and

a memory coupled to said controller, said memory comprising a computer-readable medium having a computer-readable program embodied therein for directing

operation of said semiconductor cleaning system, said computer-readable program comprising:

an instruction to control said remote dissociator;

an instruction to control said gas delivery system; and

an instruction to control said local dissociator.

22. A computer-readable storage medium having a computer-readable program embodied therein for directing operation of a semiconductor cleaning system, said semiconductor cleaning system comprising an equipment, a remote dissociator, a local dissociator, and a gas delivery system configured to introduce a gas from said remote dissociator into said equipment, said computer-readable program including instructions for operating said semiconductor cleaning system in accordance with the following:

introducing a precursor to said remote dissociator;

dissociating said precursor to create a first plurality of radicals;

introducing a first portion of said first plurality of radicals to said equipment by way of said gas delivery system, a second portion of said first plurality of radicals re-associating to create less reactive elements;

introducing said less reactive elements to said equipment by way of said gas delivery system; and

dissociating said less reactive elements to form a second plurality of radicals in said equipment.